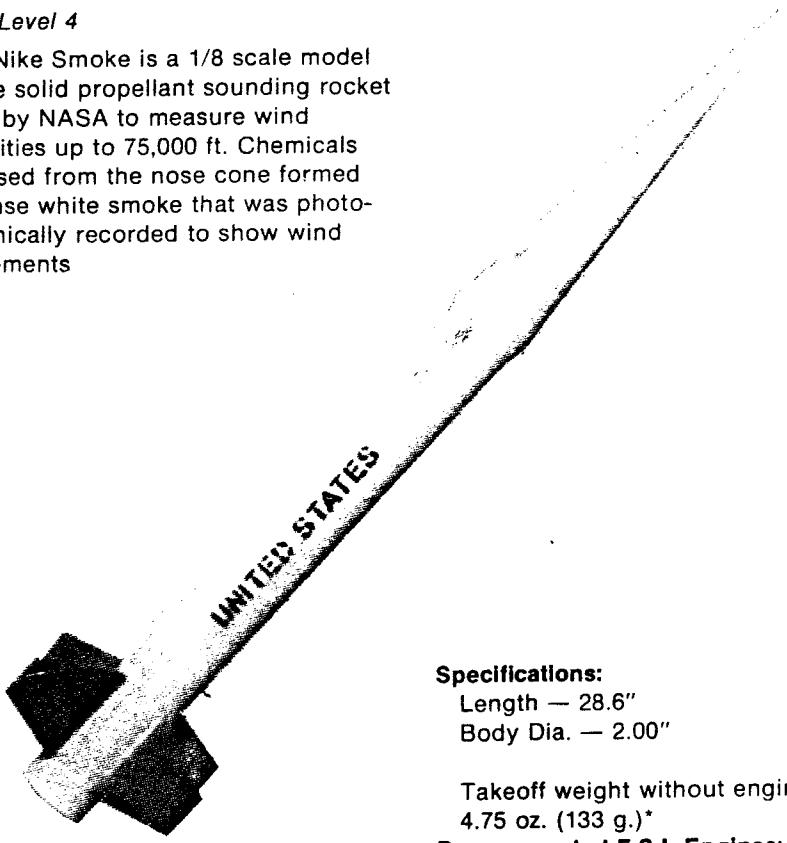
Nike Smoke
1/8 scale

ASSEMBLY INSTRUCTIONS with Detail Sketches

Skill Level 4

The Nike Smoke is a 1/8 scale model of the solid propellant sounding rocket used by NASA to measure wind velocities up to 75,000 ft. Chemicals released from the nose cone formed a dense white smoke that was photographically recorded to show wind movements



Specifications:
Length — 28.6"
Body Dia. — 2.00"

Takeoff weight without engine:
4.75 oz. (133 g.)*
Recommended F.S.I. Engines:
E60-6, F100-8
Catalog Number 1030
Ship Wt. 12 oz.

*All takeoff weights approximate.

FLIGHT SYSTEMS Inc.

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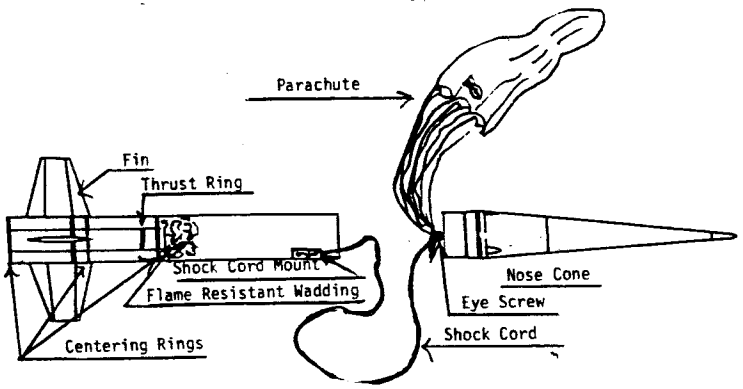
RAYTOWN, MISSOURI 64133
816-566-2011

NIKE-SMOKE

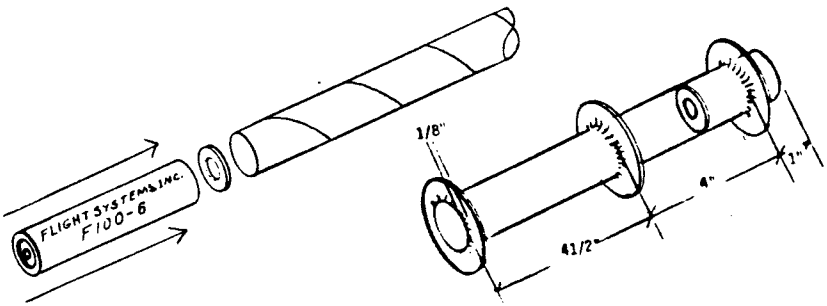


PARTS LIST:

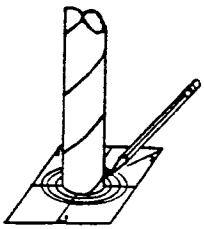
1 16.1" X 2" Body Tube
1 Nose Cone
4 Fins
1 Engine Holder Tube (9" X 1.13)
3 Center Rings (20F)
1 Thrust Ring (TR-2)
1 Shock Cord (32")
1 Shock Cord Anchor
1 Nylon Parachute (22")
1 Eyescrew
1 Snap Swivel
2 1/4" Launch Lugs
1 Card Board Sheet
1 Flameproof Wadding
1 Decal

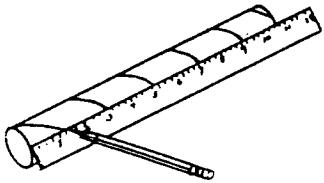
ASSEMBLY INSTRUCTIONS

Important:
Read through entire instructions before starting assembly. Check to be sure all parts are included. Test fit the parts together before applying any glue. If a part doesn't fit properly, sand or build up for precision fit. Please read each step before starting that step. Check off each completed step.

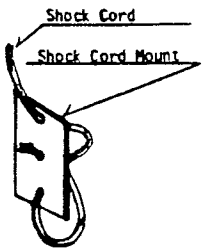


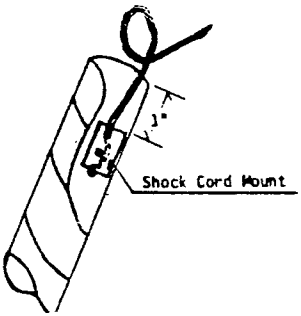
__ 1. First determine which size F.S.I. engine you intend to use in your Nike-Smoke rocket (E60-6 or F100-6 is recommended). Locate the TR-2 thrust ring (1.13 O.D. fiber board ring) and the 9" X 1.13" I.D. engine holder tube. Next put a ring of glue inside of one end of the engine holder tube. Now using a F.S.I. 27mm engine push the thrust ring into the engine holding tube until the engine projects out of the end of the tube 1/2". Remove the engine. Install rings as pictured and glue into place. Apply a fillet of glue on each side of the rings as shown. Set aside and allow to dry.



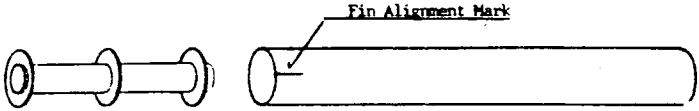


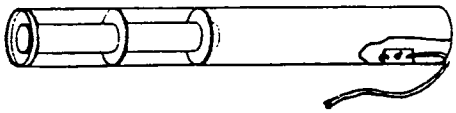
__ 2. Using fin alignment guide mark lines on the (2.00") body tube for 4 fins as shown. Using a straight edge extend lines parallel to the body tube about 4".



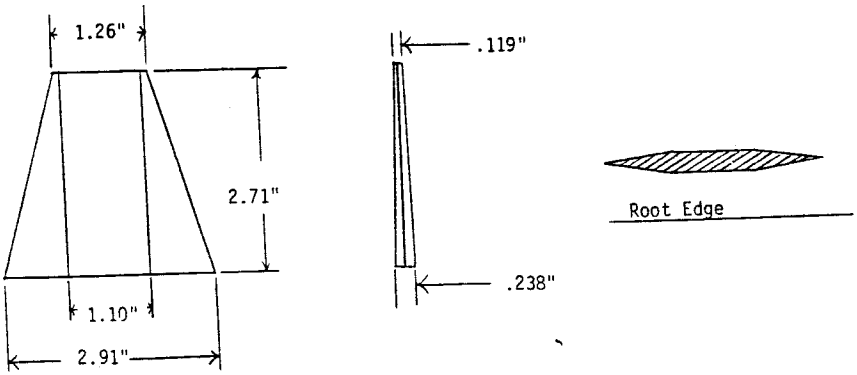


__ 3. Install shock cord in shock cord mount as shown. Spread a heavy layer of glue over the side opposite the shock cord knot. Curve shock cord mount and insert into end opposite fin alignment marks. Drawing shows the proper position in the body tube.

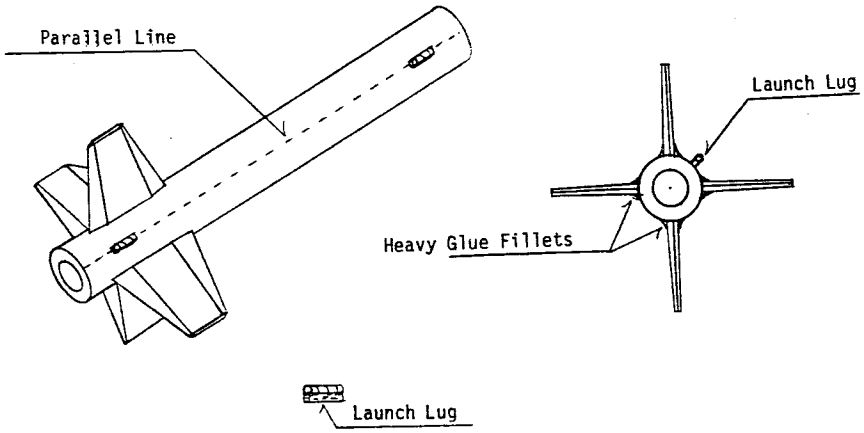




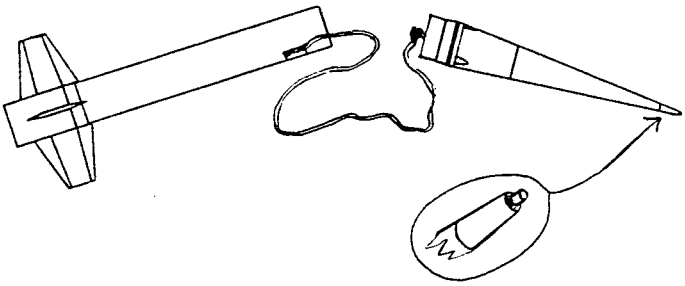
__ 4. Install the engine mount unit. Be sure the engine mount will slide easily into the body tube. If it is too tight, sand the ring until a precision fit is obtained. Apply a ring of glue inside the body tube. Insert the engine mount unit using one smooth motion until it is flush with the back of the body tube. DO NOT STOP pushing engine mount until it is in position or it will stick in the position in which you stopped. Be sure to insert engine mount in end of tube that you have previously marked for fin alignment.



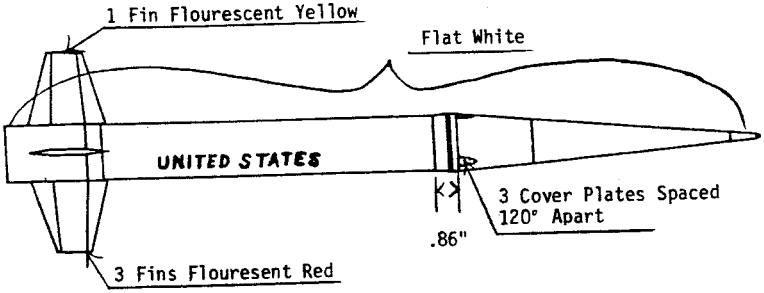
___ 5. Sanding the fins for the booster section: If you are building your model to scale sand and shape fins as shown in the detailed drawing. For sport flying you may want to simply round the edges of the fins. If so round all edges except the red one. The red edge attaches to body tube.



___6. Attach the red edge of the fins to body tube. The fins should be placed on the tube so that their trailing edge is .9" from the back of the body tube. Be sure the fins stick straight our from the body tube and are carefully aligned with fin placement lines. Apply a line of glue to the launch lug and glue it centered between 2 fins and parallel with the body tube as shown above. Stand assembly on its forward end and allow to dry. When dry run 2 or 3 heavy glue fillets on both sides of the fins for added strength. After fillets dry, attach upper launch lug to the body tube 1" from the top of the tube (you may wish to extend a straight line from the bottom lug to the top of the tube to insure proper alignment of the lug as shown).

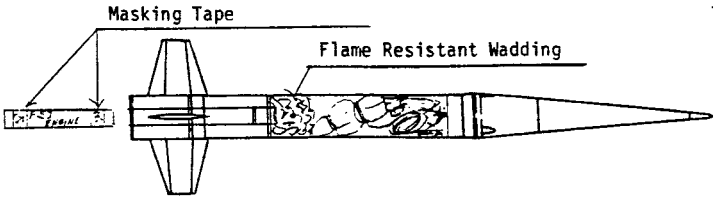


____7. Twist eyescrew into center rear of nose cone and tie on the shock cord. Slide DO NOT GLUE nose into body tube. Sand tip to shape as shown and install small piece of 1/8" tube as shown.



____8. The rocket is now ready to paint and add decals. It is recommended that a light coat of paint be sprayed on and let dry. Add a couple more mist coats lightly sanding between them. Then apply a wet coat (gloss just appears) and set aside to dry. After model is completely dry, cut 3 cover plates from cardboard sheet. Glue cover plates to the nose cone in the location shown. They should be 120 apart. Next apply decals. Cut one decal at a time from the sheet and submerge in lukewarm water until decal will slide off of the sheet (usually about 20 seconds). Gently slide decal onto the rocket and carefully align and smooth out any wrinkles.

FLIGHT PREPARATION



__ 1. Separate lower body tube from lower transition section. Tamp a piece of wadding down into the inside of the lower body tube until it comes in contact with the top of the engine holder tube.

__ 2. Bring shroud lines of 22" nylon parachute together and tie into knot about 1" from shroud line ends. Leave 1 shroud line intact and cut the others off 1/4" below the knot. Now put a couple of drops of glue on the knot to insure it does not come loose during ejection. Tie snap swivel to shroud line that you left 1" long Attach swivel to eye screw. Fold parachute. Insert shock cord first and then the parachute into body tube. Rejoin nose cone.

__ 3. Install engine using friction fit several wraps of masking tape are placed around the engine as shown to hold the engine in place. Insert F.S.I. engine until contact is made with the thrust ring. Be sure that engine fits tight enough that it will not come out of engine holder tube during ejection phase of flight.

__ 4. Flight trim model for proper stability as follows.

Step A: Take an 8 to 10 foot string. Tie a loop in end of string. Place loop around rocket body tube and slide until a balance point (CG) is established. Tape loop to body tube at this point.

Step B: Swing rocket overhead in a circular motion. A very stable rocket will point forward. It may be necessary to start rocket forward by hand if so questionable stability exists. Slide string back until a rocket nose tilts down at about 10 degrees. Repeat test. If rocket proves unstable, this condition can usually be corrected by moving the CG forward by adding weight to the nose.

__ 5. Place rocket on the launcher. Insert the F.S.I. ignitor and attach the firing clips as shown in engine instructions.

__ 6. Go back to launch control and clear the area. Arm the launch control by inserting the phone jack attached to the firing line.

__ 7. Give count down 5-4-3-2-1, ignition.

Be sure to follow the *HIA-NAR Model Rocketry Safety Code when carrying out your model rocket activities.
*HIA- Hobby Industry of America
NAR- National Association of Rocketry

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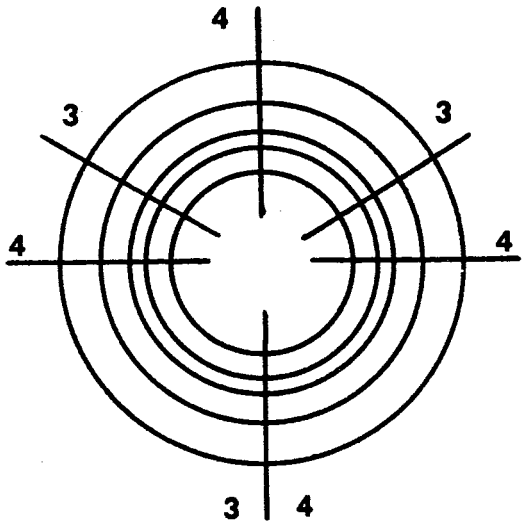
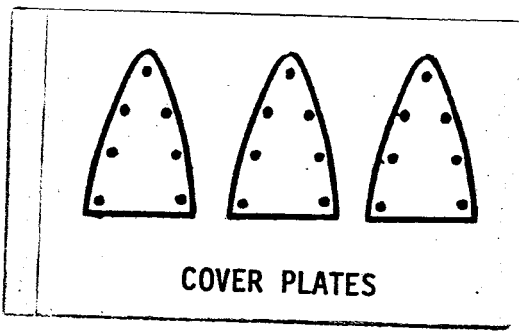
FIN PLACEMENT GUIDE

F.S.I.



1. Center end of tube in the proper circle.
2. Mark (4) lines for four fin models and (3) lines for three fin models.



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8

UNITED STATES

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NIKE
SMOKE
FLYING
MODEL
ROCKET
1/8 SPORT SCALE
1030
UNITED STATES
UNITED STATES
Nike Smoke
1/8 scale